REMARKS

To reduce the issues involved, all of the claims except claim 1, 19 and 20 have been canceled.

The rejection of claim 1 under 35 USC 103(a) as unpatentable over Danko in view of Kodate is respectfully traversed.

It is respectfully submitted that the above noted claim defines an apparatus that is patentably different from Danko in view of Kodate.

Claim 1 calls for an apparatus for detecting particles on a surface of a semiconductor wafer having repetitive patterns which includes a laser for illuminating an area on the front surface with a beam of polarized light. A lens collects light scattered from the area and forms a Fourier diffraction pattern of the area illuminated. A Fourier mask blocks out light collected by the lens at locations in the Fourier diffraction pattern where the intensity is above a predetermined level indicative of background information and leaves in light at locations where the intensity is below the threshold level indicative of possible particle information. The Fourier mask includes a spatial light modulator and a polarizing beamsplitter. A camera detects scattered light collected from the area by the lens and not blocked out by the Fourier mask. The spatial light modulator is optically addressable using an image from an LCD.

Danko discloses an apparatus for detecting particles on the front surface of a patterned semiconductor wafer having repetitive patterns which includes a laser for illuminating an area on the front surface at grazing angle of incidence with a beam of polarized light. A lens collects light scattered from the area and forms a Fourier

diffraction pattern of the area illuminated. A Fourier mask blocks out light collected by the lens at locations in the Fourier diffraction pattern where the intensity is above a predetermined level indicative of background information and leaves in light at locations where the intensity is below the threshold level indicative of possible particle information. The Fourier mask includes an optically addressable spatial light modulator and a crossed polarizer with the Fourier diffraction pattern being used as both a read beam and a write beam for the spatial light modulator. A camera detects scattered light collected from the area by the lens and not blocked out by the Fourier mask.

Kodate describes, among other things, a liquid crystal display comprising an array substrate having pixel electrodes arranged like a matrix, an active element for each of the pixel electrodes, a storage capacitance provided at some of the pixel electrodes, and a storage capacitance line for outputting the reference potential of the storage capacitance; a facing substrate having a plurality of pillars arranged so as to face the array substrate, the pillars being formed higher than other portions of the facing substrate, the pillars together with objects formed on the array substrate that face the pillars specifying a cell gap, and a common electrode for all pixels covering at least some of the pillars, the common electrode being electrically connected to the storage capacitance line at the portions of the common electrode covering the pillars; a liquid crystal layer held between the array substrate and facing substrate; and a polarizing film.

Claim 1 is directed to the embodiment of the invention shown in Fig. 1.

As can be seen, claim 1 includes a system having among other things an LCD, an optically addressable SLM and a polarizing beamsplitter. The system in Fig. 4 in

Danko does not contain an LCD or a polarizing beamsplitter but rather a CRT and a crossed polarizer.

While there may be advantages in some systems in using an LCD rather than a CRT, there is nevertheless no teaching, disclosure or suggestion or motivation in either Danko or Kodate for substituting an LCD for the CRT in the Fig. 4 system in Danko. Advantages by themselves are not sufficient for making such a substitution. There must be a teaching or actual suggestion or motivation to do so.

Furthermore, replacement of the CRT in Fig. 4 in Danko with an LCD does considerably more than noted by the Examiner. Replacing the CRT with an LCD enhances the performance of applicant's system in that it increases the ability of critically aligning the read and write beams on the SLM because the LCD offers reduced distortion and flatter field. This feature is mentioned nowhere in Danko or Kodate. Also, the system in claim 1 is much simpler, than the system in Fig. 4 in Danko, i.e, three lens rather than six lens, which results in less attenuation of the write and read beams (due to shorter total glass path) and lower back ground (i.e. less spurious reflections as a result of a fewer number of glass interfaces). None of these features are shown , taught or suggested in Danko.

As can be appreciated, applicant's system as called for in claim 1 is simpler than the system in Fig. 4 in Danko. That is, there are fewer elements to align and maintain in alignment. Furthermore, there is increased flexibility in changing magnification with the single lens configuration in the claimed system. In applicant's claimed system there is defect imaging with a signal lens and write beam imaging with a single lens, whereas in Fig. 4 in Danko there are multiple lens in each case. Also, changing the write beam magnification in the claimed system just involves a change in the conjugate distance of

one lens whereas in Fig. 4 in Danko it involves a physical replacement of one or both of lens 95 and 113.

It is not seen in any way how it would be obvious to make all of the structural changes noted above in Fig. 4 in Danko.

Finally, the claimed system is a more compact and rugged design in that there (1) are fewer lens to package, (2) the system is smaller and lower in weight and (3) the system uses a polarization cube beam splitter rather than a plate beam splitter plus a cross polarizer.

In paragraph 2 of the Office Action, the Examiner implied that Fig. 4 in Danko is similar to applicants claimed system but includes an LCD rather than a CRT. However, as can be clearly seen, there are more differences than that, namely, a polarizing beam splitter instead of two plate beamsplitters and a crossed polarizer and only three lenses instead of seven lenses and the overall arrangement of optical parts.

In summation, applicant's claimed system as defined in claim 1 is structurally and patentably different from the system in Fig. 4 in Danko for at least the following reasons: (1) it has an LCD rather than a CRT, (2) it has a polarizing cube beam splitter rather than a plate beam splitter and a cross polarizer (3) it has three lens rather than six lens and (4) the polarizing beamsplitter is disposed optically at a location different from the plate beam splitter in Fig. 4 in Danko, that is between the first imaging lens and the SLM. None of these structural features are disclosed, taught or suggested by Danko.

Allowance of claim 1 is respectfully urged.

The rejection of claim 19 as unpatentable over Danko is respectfully urged. In the rejection, the Examiner made reference to Fig. 4 in Danko.

Claim 19 is directed to the embodiment of the invention shown in Fig. 3 and includes, amongst other things, an electrically addressable SLM operating in a transmissive mode with signals being fed to it from an SLM controller. On the other hand, Fig. 4 in Danko (5,659,390) shows a system which includes an optically addressable SLM operating in a reflective mode with signals being fed to it from a CRT.

Although electrically addressable SLM's operating in a transmissive mode are known, there is simply no basis other than applicant's own disclosure for changing the system in Fig. 4 in Danko by: (1) replacing the optically addressable SLM operating in a reflective mode with an electrically addressable SLM operating in a transmissive mode, (2) and then replacing the CRT with an SLM controller and (3) eliminating at least two of the lens. Applicant is not stating that electrically addressable SLM's operating in a transmissive mode are new; but it is stating that there is no basis other than applicant's own disclosure for replacing the type SLM in Danko with an electrically addressable SLM operating in a transmissive mode. This arrangement was certainly not obvious to the inventor in Danko (5,659,390) who is also the same inventor in the present application at the time the invention was made in 5,659,390. Finally, it is clearly not obvious in Danko as to how to modify the optics in Danko so as to provide a system having only two lenses and an SLM operating in a transmissive mode. There certainly is no teaching or suggestion in Danko as to how this could be accomplished and no secondary references to support such changes.

Allowance of claim 19 is respectfully urged.

Claim 20 stands rejected under 35 USC 103 as unpatentable over Danko. In the rejection, the Examiner made reference to Fig. 4 in Danko.

Claim 20 is directed to the embodiment of applicant's invention shown in Fig. 5 and includes, amongst other things, (1) a single lens, (2) a single beamsplitter, (3) an electrically addressable SLM operating in a reflective mode and (4) a controller.

On the other hand, Fig. 4 in Danko has a system which includes (1) seven lenses.

Applicant agrees with the Examiner that reflective and transmissive electrically addressable SLM's are known; however, there is no teaching, disclosure or suggestion in Danko to replace CRT 111 with an electrically addressable SLM and a controller. Such a replacement is clearly not obvious. Furthermore, there is clearly no teaching or suggestion anywhere in Danko as to how to rearrange the system in Danko so as to end up with only one lens and one beamsplitter instead of seven lenses, or six lenses if you do not use camera 87 and lens 97 and either two or three beamsplitters. Such a total reconstruction of the system in Danko is clearly not obvious.

Finally, it is not seen how it could conceivably be obvious to substitute both an electrically addressable SLM operating in a transmissive mode and an electrically addressable SLM operating in a reflective mode for the SLM in Fig. 4 which isn't even electrically addressable in the first instance.

Allowance of claim 20 is earnestly solicited.

Allowance of the application with claims 1, 19 and 20 is earnestly solicited.

Respectfully submitted,

Irving M. Kriegsman
Reg. No. 22,733

Date: July 15, 2004
Kriegsman & Kriegsman
665 Franklin Street
Framingham, MA 01702

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on July 15, 2004.

Irving M. Kriegsman